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SOME STUDIES IN AGRICULTURAL ECONOMICS

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(These studies are a part of the research studies in the process of editing before they will be finally published in a journal which the college is putting out soon.)

SOCIO-ECONOMIC CONDITIONS OF THE GRADUATES OF THE BUKIDNON NATIONAL AGRICULTURAL SCHOOL AND NON-GRADUATE FARMERS FARMING IN MANAGOK, BUKIDNON [1]

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The farm operators varied greatly in their income, tenure status, age, size of farms, experience in farming and number of years residing in the barrio and number of years operating the present farm.

Seventy-six per cent of the farms studied were owner-operated and 24 per cent were tenant-operated. The size of the farms ranged from 3 to 6 hectares. Rice was the major crop and the main source of receipts.

Owner-operators had generally higher investment than the tenants. Labor earnings and family income of the owner-operators were very much higher than the tenants. Alien merchants and the landlords were the chief sources of credit for financing field operations.

The owner-operators were better farmers than the tenants. This is so, because the owner-operators were all graduates of vocational agriculture from the former Bukidnon National Agricultural School whose site is the area they are now cultivating. The owner-operators had better social conditions and lived in better houses with better facilities. Young and adult members of the operator families joined in organized group activities.

About three-fourths of the population of the Philippines live in rural areas [2] They have sub-standard living conditions. Where such a proportion of the total population live in poverty, the economy of the country is underdeveloped. For the economy to develop progressively, the living standard of the people must be raised. Various government agencies and entities have been created from time to time with their own or cooperative programs for the upliftment of the rural people.

Socio-economic surveys are generally conducted to serve as the basis for lines of action that any interested agency or entity, private or public, may pursue in accomplishing their objectives. An accurate knowledge of rural conditions is, therefore, necessary before an effective program of development can be implemented by government or private agencies.

Since rice is the most important agricultural produce of the country and the majority of the people eat rice, the consideration of conditions of the rice growing population in the different regions deserve priority. Managok is one of the principal rice growing areas of Bukidnon. No systematic study of the socio-economic conditions of the farmers in the area has been conducted.

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[1] Experiment Station Contribution No.2

[2] ________ Philippine Agricultural Statistics, Vol. 1, DAE, DANR, Manila 1954, p. 267.

The objective of this study is to find out the major economic and social conditions obtaining among the graduates of the Bukidnon National Agricultural School and non-graduates who are farming in the area.

The survey method was employed in collecting the data. The farm business and social conditions of the farmers for the crop year 1956-1957 were obtained from interviews with the farmers, their wives, and other members of their families. These were recorded in pre-tested questionnaires. All the farmers, graduates and non-graduates of the Bukidnon National Agricultural School, farming the former school reservation were included in the study.

DISCUSSION OF RESULTS

Description of the area. The former Bukidnon National Agricultural School reservation in Managok is situated about nine kilometers from the National highway. The place is bounded on the west by barrio Linabo, on the east by Managok proper, on the north by Ulimanon Creek, and on the south by the Capistrano mountains. A provincial road connects these barrios to the national highway. The place is easily accessible by motor transportation but only one bus runs to and from the barrio each day. The municipality of Malaybalay which is the capital of the province is traversed by the Sayre Highway. It has a provincial and a private high school offering general curriculum, and a normal college offering a four-year elementary education curriculum. The barrio has an elementary settlement farm school. It has four "sari-sari" stores and a Roman Catholic chapel. The ricefields are irrigated by means of meandering creeks, the Ulimonon on the north, Binalbagon on the south, and Abuhan on the west.

According to information, a certain portion of the unoccupied area of the barrio of Managok, Malaybalay, Bukidnon was converted into a reservation for the Managok Agricultural School which was originally established in Colonia, Maílag, Bukidnon. A greater portion of the reservation was converted into ricefields due to the presence of live streams and good fertility of the soil. Later the Managok Agricultural School was converted into the Bukidnon National Agricultural School to get better financial support from the government and thus rendering better instruction for young boys and girls interested in agriculture particularly those coming from Bukidnon.

During the Japanese occupation (1941-1944) the area was cultivated by students stranded in the place. On June 27, 1946, classes were resumed. Zosimo Montemayor, then Superintendent of the school, was instructed by the then Secretary of Instruction, Manuel V. Gallego, to transfer the school site to Musuan, Bukidnon. The Managok site was to be kept as a settlement project for graduates of the Bukidnon National Agricultural School. Only around 380 hectares of the reservation was available for subdivision into 8-hectare lots for each applicant. Only fifty graduates were able to acquire lots. The rest of the reservation consisting of a 200-hectare forest area, a 6-hectare public space, a 24-hectare site for the Managok Settlement Farm School and a 104-hectare lot for replacement residential lots and a proposed road were not released for subdivision.

Economic Conditions

Birthplace, age and farming experience. The age of the operators ranged from 21 to 67 years or an average of 38 years. The average age of owner-operators was 42 years and the tenant-operators was 36 years. The owner-operators were somewhat older than the tenant-operators.

None of the operators was born in the barrio. The owner-operators come to the place mainly to study while the tenant-operators came to work for absentee owners. Neither did any come from other barrios of the municipality. Only one or 2 per cent came from another municipality of the province while 49 or 98 per cent came from other provinces.

Owner-operators resided longer in the place than the tenant-operators because their residence when they were still students were included. When they graduated the land was released to them so that they resided in the place permanently. Tenants were much younger and had a shorter residence in the place which suggests that they are of a mobile class. They also had a shorter farming experience. The number of years that tenants had been operating farms was three-fifths that of the owner-operators.

Table 1. Birth place, age, and farming experience of operators

ITEM	OWNER	TENANT	ALL FARMS
Number of farms	12	38	50
Age of farm operator, years	42	36	38
Birthplace of farm operators in per cent			
Operator's barrio	0	0	0
Other barrios of municipality	0	0	0
Other municipalities of province	8	0	2
Other provinces	92	100	98
Length of residence in barrio, years	20	5	9
Number of years engaged in farming	22	16	18
Number of years farming in barrio or operating the farm	20	5	9

Size of farms. The farmers operated areas ranging from one to eight hectares. The average size for all tenure classes was 3.8 hectares. This is slightly larger than the national average size of 3.5 hectares [3]. On the average owner-operators had larger farms than tenant-operators. The former cultivated an average of 6 hectares while the latter had an average of 3 hectares.

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[3] Philippine Agricultural Statistics; Vol. 2. Division of Agricultural Economics, Department of Agriculture and Natural Resources, 1954, p. 7.

Table 2. Size of farms

AREA IN HECTARE	NUMBERS Owners	 Tenants	ALL FARMS Number	 Per cent
1.00 - 2.00	1	13	14	29
2.01 - 3.00	0	15	15	30
3.01 - 4.00	1	3	4	8
4.01 - 5.00	2	4	6	12
5.01 - 6.00	1	2	3	6
6.01 - 7.00	2	0	2	4
7.01 - 8.00	5	1	6	12
Total	12	38	50	100
Average area	6	3.1	3.8	

Utilization of farm area. More than nine-tenths of the farm area was planted to crops (Table 3). Only a very small area was devoted to farmsteads. Operators, especially tenants, built their houses on idle areas. Most often these were on the edges of the fields. Operators who maintained lawns had larger farmsteads than those who did not maintain lawns. The rest of the area was utilized for pasture. Since the area for pasture was small, animals were grazed further on idle lots which belonged to absentee-owners.

Table 3. Utilization of farm areas in hectares

USE	OWNER	TENANT	ALL FARMS Number	 Per cent
	Hectare	Hectare	Hectare	
Crops	5.19	3.12	3.62	95.00
Farmstead	.23	.0	.05	1.00
Pasture	.64	.0	.15	4.00
Total	6.06	3.12	3.82	100.00

Important crops grown. Rice and corn were the principal crops grown. Rice was grown by 94 per cent of the farmers or on 47 farms covering 158 hectares. Owner-operators cultivated larger palay farms with an average of 4.2 hectares while tenants cultivated only an average of 2.8 hectares. Corn was grown by 28 per cent of the farmers or on 14 farms comprising 21.5 hectares.

Sugar cane, coffee, cowpea, peanut, and tobacco were grown in limited quantities. Sweet potato, cassava, eggplant, tomato, sitao, and other vegetables were grown in very limited scale. The most common fruit plant grown was banana. This was usually grown along farm boundaries and near the houses. One-half of the operators grew sweet potato and cassava.

Table 4. Important crops grown

CROPS	NUMBER OF FARMS b/	AREA PLANTED		ALL FARMS
		OWNER	TENANT	
		Hectare	Hectare	Hectare
Rice	47	4.2	2.8	3.2
Corn	14 b/	.9	.3	.4
Sugar cane	4	a	a	a
Coffee	2 b/	a	a	a
Tobacco	1	a	a	a
Banana	29 b/	a	a	a
Other fruits	4	a	a	a
Peanut	1 b/	a	a	a
Sweet potato	24	a	a	a
Cassava	27	a	a	a
Other root crops	1	a	-	a
Cowpea	2	a	a	a
Eggplant	18	a	a	a
Tomatoes	6	a	a	a
Sitao	6	a	a	a
Ampalaya	2	a	a	a
Other vegetables	8	a	a	a

a/ Less than 0.1 hectare
b/ Some areas are double-cropped.

Livestock kept. All the farmers raised carabaos for draft purposes. None raised cattle either for work or for home consumption (Table 5). These constituted the only source of farm power in addition to human labor. Owner-operators kept an average of two carabaos to meet labor requirements on the farm inasmuch as they cultivated bigger farms.[4] Tenants on the other hand kept an average of one carabao each. Carabaos other than for work purposes were mostly females kept primarily for milking and breeding purposes. Nearly every farmer raised poultry and swine mainly for home consumption and some for market. Farmer-operators living along or near creeks and streams raised ducks. Owner-operators raised more livestock than tenant-operators.

Capital investment. The average capital investment for each farm was P1,840.00. More than one-half of this amount was in land (Table 6). Work animals and buildings ranked next to land with 21 per cent and 11 per cent of the capital investment, respectively. Very little was invested in other livestock, equipment, and seeds and supplies.

Table 5. Important livestock raised

ITEM	NUMBER OF FARMS	NUMBER OF ANIMALS		AVERAGE FOR 50 FARMS
		Owner	Tenant	
WORK ANIMALS:				
Carabaos	50	1.00	1.20	1.36
OTHER LIVESTOCK:				
Carabao	5	0.58	0.05	0.18
Swine	10	2.00	0.42	0.80
Hens	47	16.60	5.13	7.88
Other chickens	43	17.42	9.24	11.20
Other poultry	16	16.83	2.76	6.14

The investment for owner-operated farms was relatively higher than the tenant-operated farms. The difference in investment among these farms may be due to size. The owner-operated farms are bigger than the tenant-operated farms.

Table 6. Capital investment

FORM OF CAPITAL	OWNER	TENANT	ALL FARMS	PER CENT
	peso	peso	peso	
Land	1,539	853	1,018	55
Work animals	535	343	390	21
Buildings	449	111	192	11
Tools and equipment	224	78	113	6
Other livestock	213	45	85	5
Seeds and supplies	84	29	42	2
Total	3,044	1,459	1,840	100

Ownership of capital. The owner-operators owned all the capital invested in their farms while the tenant-operators owned only 35 per cent of the capital (Table 7). For all farms, the average capital investment of the operators was 60 per cent of the total. Although there are more tenants than owners, the latter had bigger investment because the area of their farms are almost twice those of the tenants. Some of the owner-operators besides financing their own farming have to supply their tenants with some of the work animals, equipment and seeds. These differences in the ownership of capital between the owner-operators and the tenants may also be due to our tenancy laws. The land which is the biggest investment is supplied by the owner of the farm.

Farm receipts. The receipts from palay was the highest (Table 8). It contributed about four-fifths of the total receipts derived from the different sources. The farm receipts arranged from the highest to the lowest are: palay, poultry and eggs, corn, increase in capital, other livestock, fruits, vegetables, sweet potato, cowpea and peanut. The last four crops contributed less than 0.1 per cent of the total receipts. The field crops are the greatest sources of receipts.

Table 7. Ownership of capital

FORM OF CAPITAL	CAPITAL OWNED BY OWNER	CAPITAL OWNED BY TENANT	ALL FARMS
	pesos	pesos	
Land	1,539	0	369
Work animals	535	231	304
Buildings	449	111	192
Tools and equipment	224	68	105
Other livestock	213	45	85
Seeds and supplies	84	27	41
Total	3,044	482	1,096

The owner-operators received more than thrice the amount received by the tenants. The tenants received a little more than one-half of the total receipts received by all farms. The differences in the amount of receipts received by the two tenure groups may be due to size of farm business. Besides, the receipts received by the owner-operators constitute their shares from the tenant and the amount raised by them. The security of tenure may be another reason why the tenants had less receipts than the owner-operators. While the owner-operators planted more crops, the tenants on the other hand were reluctant because of the insecurity of tenure. Instead, they concentrated their effort in raising palay.

Table 8. Farm receipts

SOURCES OF RECEIPTS	OWNER	TENANT	ALL FARMS	PER CENT
	pesos	Pesos	Pesos	
Field crops:	1,470	477	716	85
Palay	1,376	445	669	79
Corn	94	32	47	6
Cowpea	a	a	a	a
Peanut	a	a	a	a
Sweet potato	a	a	a	a
Poultry and eggs	221	30	76	9
Increase in capital	83	22	37	4
Other livestock	13	7	8	1
Fruits	16	a	4	1
Vegetables	4	2	2	a
Total	1,807	538	843	100

a/ Less than 0.1 per cent

Farm expenses. Expenses for all farms averaged P671 (Table 9). Owner-operators had about one-fourth more expenses than the tenants. The share of the harvester was the largest item of expense comprising 35 per cent. The next largest item was the share of the landlord which was 34 per cent. This expense was incurred only by the tenants in the form of share of crop paid to landlords. The other items of expense arranged from highest to lowest were cash expenses, unpaid family labor, purchased livestock, and tools and equipment.

The cash expenses of the owner-operators were bigger than the tenants. This may be due to the larger size of the areas farmed by the owner-operators.

Table 9. Farm expenses

KINDS OF EXPENSES	OWNER	TENANTS	ALL FARMS	PER CENT
Harvesters' share	396	188	238	35
Landlord's share	0	297	226	34
Cash expenses	298	85	136	20
Unpaid family labor	27	47	42	6
Purchased livestock	90	7	27	4
Purchased tools & equipment	4	1	2	1
Total	815	625	671	100

Farm privileges. Farm privileges consist of the value of farm products used in the operator's household including the value of one year's use of the operator's dwelling (Table 10).

Farm crops constituted the highest, 81 per cent, of the farm privileges for all farms. The owner-operators had more farm privileges than the tenants because the latter had to dispose a larger proportion of the small production to meet land rent.

The value of crops, poultry and livestock, fruits and vegetables used at home amounted to P292 on the average. When the rental value of the dwelling was added, the farm privileges amounted to P310. This amount was much lower than the farm receipts. This may be because the operators raised more than their needs and sold most of it rather than use it in the farm. Besides the operators prefer corn to rice so that they sell most of the rice they raise. This result is different from that of a survey of rice farmers in the Ilocos region where their farm privileges were higher than their receipts because they used most of the products they produced. [5]

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[5] Sacay, F.M. et al. The Economic and Social Status of Rice Farmers in the Ilocos Region. Philippine Agriculturist. Vol. XL No. 1. June 1956, U. P. College of Agriculture, College, Laguna. p. 656.

Table 10. Farm privileges

ITEM	OWNER	TENANT	ALL FARMS VALUE	ALL FARMS PER CENT
	pesos	pesos	pesos	
Farm crops	358	217	251	81
Poultry and livestock	67	24	35	11
Rental value of dwelling	39	11	18	6
Fruits & vegetables	11	4	6	2
Total	475	256	310	100

Labor income and labor earnings. The farm operators had small farm income and their labor income were even lower (Table 11). This may be due to large amount of farm expenses incurred by the operators. When the value of farm privileges was added to the labor income, the labor earnings averaged P416.

The labor earnings of owner-operators were much higher than those of the tenants. This condition exists because the owners sold more farm products than the tenants besides having bigger farms.

Labor earnings were influenced by crop area and yield per hectare. As the crop area increased, labor earning tended to go up. Farmers with higher yields per hectare generally had greater labor earnings.

These results seem to corroborate with the work of Sacay et al [6] in a survey of farmers in the Ilocos region.

Table 11. Labor income and labor earnings

ITEM	OWNER	TENANT	ALL FARMS
	peso	peso	peso
Farm receipts	1,807	538	843
Farm expenses	815	625	671
Farm income	992	-87	172
Interest at 6% on Operators Average Investment	183	29	66
Labor income	809	-116	106
Farm privileges	475	256	310
Labor earnings	1,284	140	418

Family income. The operators do some outside jobs to add to their labor earnings. The jobs commonly performed outside their own farms are plowing, harrowing, weeding and planting for others. A few engaged in buying and selling, sawing logs, carpentry and blacksmithing.

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[6] Ibid.

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Other members of the family also contributed to the family income. The owner-operators had higher family income than the tenants. The total family income amounted to ₱742 (Table 12). The average number of persons in the family was 6 and the income for each individual amounted to ₱124.

The family income for owner-operators was much higher than the tenants because of the bigger area that the owner-operators farmed and higher interest earned on investment.

Table 12. Family income and amount available for the family

ITEM	OWNER	TENANT	ALL FARMS
	peso	peso	peso
Operator's income			
From job off farm	227	137	159
From job on farm	1,284	140	416
Earnings of other members of family			
From farm (charged as expense)	27	47	42
From job off farm	70	72	71
Interest earned by operator's Investment	156	22	54
Total	1,764	418	742
Number in household	7	5	6
Income for each member of the family	252	84	124

Comparison of farming efficiency between graduates and non-graduate farmers

In this comparison nine farmer-graduates of the Bukidnon National Agricultural School were compared to nine non-graduate tenant-farmers. Both had an average ricefield of 4.75 hectares. The average production of palay per hectare in cavans was 48.22 for the graduate farmers and 43.33 for non-graduate farmers both of which were more than one and one-half times the national average.[7] The lower production on the part of the tenants was due to less supervision of the field after planting.

The investment of the graduate-farmers was four times as much as those of the tenants. This was because the tenants did not possess any piece of land. The buildings they had were generally small. Less attention was paid to raising livestock.

Receipts from palay for both tenures were almost the same in value. Since most of the poultry were raised by the graduates, they had more sales than the tenants who rarely kept them.

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[7] Philippine Agricultural Statistics, Vol. I., op. cit. p. 34.

The total farm expenses of the graduate-farmers were a little less than the tenant-farmers because they did not pay land rent. On the other hand, the tenants gave a share of the crop to the landlord for land rent. The expenses for both on harvester's share was almost the same. Cash expense was another great item. The owners had to pay more to finance the operation of the field than the tenants did. Purchases of livestock on the part of the graduates were four times more than the non-graduates.

When total farm expenses were deducted from total farm receipts, the graduate-farmers realized a bigger amount than the non-graduate farmers. This was due to the higher total farm receipts and lesser farm expenses of the graduate-farmers.

After deducting the interest on operator's average investment from farm income, the labor income for the non-graduates were negative.

Adding the farm privileges to the labor income, both operator's labor earnings were positive. However, the non-graduates did not have as much labor earnings because their farm privileges were relatively lower and was further reduced by their negative labor income.

The graduates had higher labor earnings than the tenants because the former had higher non-farm income than the latter.

To obtain the total family income the total operator's labor earnings were added to the unpaid family labor and other family non-farm income. The graduate-farmers had higher total family income.

To find the amount available for family living, the interest earned by operator's investment is added to the total family income. The graduates had bigger amount available for family living. This could be attributed to receipts, lesser expenses and greater farm privileges, better income from jobs off farm and additional income of other family members.

Rice growing practice. The farmers prepare their seedbeds in an upland area. The preparation consisted of cleaning the vegetation, plowing the field once, harrowing until the seedbed was well pulverized, furrowing and sowing of seeds in the furrows or drilling. Furrowing with a hoe was preferred by the farmers because the plow makes deeper furrows and the seeds emerge in a much longer time.

After the seedbed, the main lowland field is prepared. The lowland fields are plowed once and harrowed two to three times. The farmers fix the dikes and put the paddies in shape to hold irrigation water. Puddling and leveling of the field are done simultaneously. This is done so that the fields can be irrigated evenly, subjecting plants to uniform depth of water. When the field is thoroughly prepared and the seedlings are at the right age for transplanting, pulling the seedlings is done. Transplanting follows. Two to three weeks after transplanting, the field is weeded. Control of irrigation water starts after the seedlings have recovered and water is checked two or three times a

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week. This is done up to the dough stage after which water is drained to hasten the maturity of the plants and render the field dry for harvesting.

Table 13. Comparison of farming efficiency of farmer-graduates of the Bukidnon National Agricultural School and non-graduate tenants.

ITEMS	GRADUATE-OWNERS	NON-GRADUATE TENANT
	peso	peso
Operators' Average Inventory	3,191	727
Land	1,556	0
Buildings	439	126
Tools and equipments	282	100
Other livestock	221	43
Work animals	609	410
Seeds and supplies	84	48
Farm Receipts	1,366	967
Palay	930	919
Fruits and vegetables	24	3
Poultry and eggs	292	20
Other livestock	17	12
Increase in capital	103	13
Farm Expenses	838	954
Landlord's share	0	403
Harvester's share	398	327
Cash expense	278	144
Unpaid family labor	36	53
Purchased livestock	121	23
Purchased tools & equipment	5	4
Farm Income	528	13
Interest on Operator's Average Average Investment	191	44
Labor Income	337	-31
Farm privileges	436	228
Operator's labor earning	773	197
Operator's non-farm Income	258	123
Operator's total labor earnings	1,031	320
Unpaid family labor	36	53
Other family non-farm income	83	73
Total family income	1,150	446
Interest Earned by Operator's Investment	165	36
Amount available for family living	1,140	482

The farmers use sickle and "kayog" for harvesting. Threshing of palay is usually done by trampling with carabao or men.

Ricefields were laid idle after harvesting up to the next season of planting. There was no rotation with other crops.

The rice varieties used were wagwag and elon-elon. Wagwag proved better by an excess of three and one-half cavans per hectare over the elon-elon.

Table 14. Lowland palay - average labor requirment

CULTURAL PRACTICES	MAN HOUR	ANIMAL HOUR
Seedbed Preparation		
Cleaning	4	0
Plowing	6	5
Harrowing	5	4
Furrowing	3	0
Sowing the seeds	4	0
Field Operation		
Cleaning the field	20	0
Plowing	40	24
Harrowing	60	36
Putting dikes to shape	10	0
Leveling paddies	10	6
Pulling seedlings	28	0
Transplanting	60	0
Irrigating	45	0
Weeding	40	0
Harvesting	60	0
Threshing	30	7
Total	425	82

Cost of production. The total cost of production per hectare of the lowland ricefield was ₱223.16 (Table 15). This was only two-thirds that of the cost of production per hectare, hand plowed, of the Maligaya Rice Experiment Station, Muñoz, Nueva Ecija.[8] The items of the cost of production in the order of procedure are seedbed preparation, preparation of the lowland field, transplanting, care of crop, harvesting and threshing, hauling and other expenses. The cost of harvesting and threshing is 37 per cent of the total cost of production inasmuch as the harvesters had to take one-fifth of the total harvest. Although the amount appears too much on the part of the farmers, they simply had to take it since it is the custom of the place and that laborers are hard to find in Bukidnon. The next highest item in the cost of production is the preparation of the lowland field, 23 per cent. This amount is justifiable since culture has a marked influence on the growth and yield of crops. Other expenses are land tax, cost of seeds and depreciation of work animals and tools covering 10 per cent of the total. The land tax is 1 per cent of the assessed value. The cost of seeds per cavan was based on the market value. The depreciation of farm animals was found by dividing the difference between the cost price and the selling price after it has been unfit for work by the estimated workable age. Since tools on the farm last for many years, the value for its use was found by taking 6 per cent of its cost price. The cost of transplanting was about 10 per cent. Other minor but important factors are caring of the crops, 8 per cent preparation of the seedbed, 4 per cent, hauling harvested crops from the fields to the farmer's house about 1 per cent.

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[8] Handbook of Agriculture, Department of Agriculture and Natural Resources, Division of Agricultural Economics. pp. 32.

Table 15. Cost of production per hectare

ITEMS	VALUE IN PESOS	
Seedbed preparation		7.05
Cleaning	1.00	
Plowing	2.45	
Harrowing	1.75	
Farrowing	.85	
Sowing seeds	1.00	
Preparation of lowland field		48.70
Cleaning	4.60	
Plowing	15.20	
Harrowing	22.80	
Cleaning & fixing dikes	2.30	
Leveling paddies	3.80	
Transplanting		20.40
Pulling seedlings and hauling	6.60	
Transplanting	13.80	
Care of crops		15.95
Irrigating	6.75	
Weeding	9.20	
Harvesting and threshing[a]		83.60
Hauling		2.50
Other expenses		22.48
Land tax	2.75	
Cost of seeds	9.50	
Depreciation of animals and tools	10.23	
Total		223.16

[a] 20 per cent of total harvest (44 cavans per hectare on the average)

Labor on the farm. Part of the labor from plowing up to weeding was done by the so-called "honglos" system or exchange labor. [9] This is a form of a cooperative labor where a farmer has to render the same number of days rendered to him by another farmer. During the peak of field operations, they had to hire other persons especially during planting. On harvest season, many laborers from outside the place go there to harvest and receive one-fifth of the products they have harvested.

Sharing system. There were two kinds of sharing arrangement used, the forty-sixty ratio and the twenty-five-seventy five ratio in favor of the tenants.

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[9] Oppenfeld, et al, Farm Management, Land Use and Tenancy in the Philippines. Central Experiment Station Bulletin 1, August, 1957. p. 162.

Twenty of the tenants had the 25-75 and eighteen had the 40-60 ratio. In the 25-75 arrangement the tenants were at more advantage than the legal division 30-70, since the average yield per hectare corresponds to a first class land 10/. In this pattern the tenants provided the work animals, the necessary implements and defrays all the expenses for planting and cultivation. In the 40-60 ratio, the landlord furnishes the work animals and farm implements. The tenants defray all the expenses during planting and cultivation. For both arrangements, the seeds for the next crop and shares for the harvesters were set aside before sharing with the landlord was done.

Sources of credit. Since majority of the tenants cannot afford to shoulder all the cash expenses during the field preparation, they have to borrow money. Forty-two per cent borrowed from the alien merchants without interest on condition that they have to sell their expected produce to them. Other landlords lent cash to their tenants and payments were made at harvest, either in palay or in cash without interest.

Rice outlet. Majority of the palay were sold to alien merchants because they offered better prices than the Filipino merchants. Aside from this the aliens extend credit during planting without interest on condition that their produce will be sold to them. Only four of the owner-operators sold a part of their palay to the FaCoMa warehouse.

Social Conditions

Types, size and value of dwelling. The type of dwelling are classified into mixed (strong and light) and light materials (Table 16). Out of a total of fifty households surveyed, 22 houses or 44 per cent were made of mixed materials and 28 or 56 per cent of light materials. The average area of dwelling was 31 square meters. Owner-operators have bigger dwellings than the tenants. The average number of rooms was three and the number of persons per room was two. The owners had more number of persons per household than the tenants. The average number of persons per household was six. The operators had a floor space each of six square meters. The owners had bigger value of dwelling than the tenants. The average value for all dwellings was ₱176.00.

Roofing. Cogon was the most common material for roofing (Table 17). This is because it was more abundant and available in the place. Of the total houses, 76 per cent were roofed solely with cogon. Four houses or 33 per cent were owned by owner-operators and 89 per cent or 34 houses belonged to tenants.

Since cogon is easily burned, those who had old galvanized iron sheets salvaged from ruined houses, utilized these for roofing the kitchen area. Twelve per cent of the houses had this combination of roofing. Twenty-five per cent or three houses belonged to owner-operators and eight per cent or three

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10/ Rivera, G.F. and MacMillan, R.T. "Rice Share Tenancy Act" (Act No. 4045). An Economic and Social Survey of Rural Households in Central Luzon. Cooperative Research Project of the Philippine Council for the United States Aid and the United States of America, Operations Mission to the Philippines, Manila, 1954. p. 173.

belonged to tenants.

Table 16. Average size and value of farm houses by type of materials.

ITEMS	MIXED STRONG & LIGHT		LIGHT		ALL HOUSES
	Owner	Tenant	Owner	Tenant	
Number of houses	9	13	3	25	60
Value of dwelling (pesos)	468	107	156	109	176
Size of dwelling (sq.m.)	53	32	37	21	31
Number of rooms	5	3	4	3	3
Number of persons per room	1	2	2	2	2
Number of persons in household	7	6	6	5	6
Floor area per person (sq.m.)	7	6	6	5	6

Galvanized iron sheets which is most expensive, were used by six per cent or three of the total houses and these belonged to owner-operators. None of the tenants home had this kind of roofing.

Nipa roofed houses were not common in this place, because nipa is not available. Nipa makes better roofing and lasts longer than cogon but is more expensive. Due to inavailability and higher cost, only four per cent of the total number of houses were roofed with nipa. One house belonged to an owner-operator and one to a tenant.

Only 2 per cent of the total houses were roofed with nipa and galvanized iron sheets combination. Galvanized iron sheets were used over the kitchen area.

Table 17. Roofing materials of farm houses

TYPES OF ROOFING	OWNER	TENANT	ALL HOUSES
Number of houses	12	38	50
	per cent of houses		
Cogon	33	89	76
Cogon and galvanized iron	25	8	12
Galvanized iron sheet	25	0	6
Nipa	8	3	4
Nipa and galvanized iron	8	0	2

Water Sources. All of the farm houses had more than one source of water supply (Table 18). The creek was the major source of bathing and for laundry purposes. All homes used this source for the purpose mentioned. Seventy-eight per cent of the homes used water from surface wells for household purposes.

Twenty-two per cent used water from the nearby spring. Eighteen per cent fetched from a neighbor's water pump. Water from the spring and from the water pump were for drinking purposes. Homes far from both sources depended on the water from the surface wells for drinking.

Table 18. Sources of water for farm homes

WATER SOURCE	OWNER	TENANT	ALL HOMES
Number of homes	12	38	50
		per cent of all homes[a]	
Creeks	100	100	100
Surface wells	75	79	78
Spring	33	18	22
Water pump	33	13	18

[a] Percentages total more than 100 since all homes had more than one source of water.

Sanitary facilities. Sanitary toilet is not found in every home (Table 19). Only 70 per cent of the farm homes had an adequate means of sewage disposal. Of the 70 per cent or 35 toilets, 83 per cent or 10 belonged to owner-operators and 66 per cent or 26 belonged to tenant-operators. Eighteen per cent of the farm homes had only an open pit type of toilet. Seventeen per cent or 2 belonged to owner-operators and 18 per cent or 7 belonged to tenant-operators. Twelve per cent or 6 of the total farm homes had none at all and this belonged to the tenant-operators.

If only all of the operators were conscious in providing themselves with sanitary sewage disposal, this could be built at little cost since local materials could be had free and accessible to every home.

Table 19. Toilet facilities of the farm homes

TOILET FACILITIES	OWNER	TENANT	ALL HOMES
Number of homes	12	38	50
		per cent of all homes	
Closed pit	83	66	70
Open pit	17	18	18
None	0	16	12

Other household facilities. Modern facilities and conveniences were not found in the farm homes (Table 20). All of the houses were lighted uniformly with petroleum lamps.

An earthen stove was found in all farm homes. No other type of stoves such as the kerosene or other forms were used.

One-half of the owner-operators surveyed had a sewing machine and two of the owners were the barrio's seamstresses. Tenants did not have any sewing machines.

Only one phonograph was found in the barrio. This belonged to an owner-operator. The best music in the barrio could be heard only through this lone facility.

Other facilities were tables, benches, chairs, beds, aparadors, and cupboards. These were either made of wood or bamboo. Two owner-operators had spring beds and cots were possessed by 4 owner-operators and a tenant.

Table 20. Other household facilities in per cent

FACILITIES	OWNER	TENANT	ALL HOMES
Petroleum lamps	100	100	100
Earthen stoves	100	100	100
Sewing machine	50	0	12
Phonograph	8	0	2
Tables:			
Wooden	100	87	90
Bamboo	0	5	4
Benches:			
Wooden	92	79	82
Bamboo	17	68	56
Chairs:			
Rattan	8	3	4
Wooden	67	24	34
Bamboo	0	13	10
Beds:			
Spring	17	0	4
Cot	33	3	10
Wooden	42	13	20
Bamboo	25	42	38
Aparador:			
Wooden	58	11	22
Bamboo	63	32	32
Cupboard	17	0	4

Educational attainment. Owner-operators were all secondary graduates of the Bukidnon National Agricultural School (Table 21). The educational attainment of tenant-operators on the other hand ranged from unschooled to second year college with an average of four years in the grade school. Ten per cent were illiterates. Six per cent had one year of primary education, 6 per cent with two years of primary education, and 6 per cent with three years of primary education. Fourteen per cent had attended up to four years in the grade school. After this, less than one-half were able to have more years of studies and these composed of 10 per cent fifth graders, 12 per cent sixth graders, and four per cent seventh graders. Two per cent were first year high school, 2 per cent second year high school, 2 per cent were fourth year high school, and 2 per cent second year college. The high percentage of the operators being high school graduates was due to their schooling in the former Bukidnon National Agricultural School. Twenty-four per cent of the total number of operators were high school graduates.

Children of owner-operators from 7 years of age and above were all in school while the children of tenant-operators after finishing the elementary grades were mostly out of school because of financial setbacks.

Table 21. Educational attainment of operators in per cent.

EDUCATIONAL ATTAINMENT	OWNER	TENANT	ALL OPERATORS
Unschooled	-	13	10
First grade	-	8	6
Second grade	-	8	6
Third grade	-	8	6
Fourth grade	-	18	14
Fifth grade	-	13	10
Sixth grade	-	16	12
Seventh grade[a]	-	5	4
First year high school	-	3	2
Second year high school	-	3	2
Third year high school	-	-	-
Fourth year high school	100	3	26
First year college	-	-	-
Second year college	-	3	2

[a] This was when the grade was not abolished.

Recreational activities. Chatting with neighbors and friends was the most common form of recreation enjoyed by almost three-fourths of the residents (Table 22). Only children below seven years of age did not chat because they cannot go around the neighbors.

Wedding ceremonies and other big parties meant a day of recreation to both children and adults. Seventy-one per cent of the population enjoyed attending parties.

Reading was another form of recreational activity. Thirty-four per cent indulged in reading although some of this number read irregularly. Most of the tenants' homes did not have any reading materials. The magazine they read were mostly borrowed. Owner-operators had reading materials, either bought or borrowed. The most commonly read magazine was the Bisaya and the Hiligaynon. Newspapers, Philippines Free Press, and Agricultural and Industrial Life magazines were also read by those with higher educational attainment. They either borrowed these or bought them. Only two subscribed to the Agricultural and Industrial Life magazine. The low percentage of tenants indulged in reading could be attributed to their low educational attainment.

Young men and women went to dances occassionally. Other forms of recreation were hunting, playing basketball and volleyball, cock fighting and other forms of gambling.

The said recreational activities served also as their source of information.

Table 22. Recreational activities of members of farm families in per cent a/

RECREATIONAL ACTIVITIES	OWNER	TENANT	ALL PERSONS
Chatting	70	74	73
Parties	59	76	71
Reading	48	28	34
Dances	25	20	21
Hunting	6	11	9
Basketball	8	8	8
Volleyball	11	6	8
Cock fighting	6	6	6
Other forms of gambling	4	7	6

a/ Percentage total more than 100 because members of farm families indulged in a variety of recreation.

Membership to organization. Generally, adults and family heads had separate organizations attended (Table 23 and 24). These organizations were the Barrio Council, Puroks, P.T.A. B.N.A.S. Project 1 and the different religious affiliations.

The Barrio Council was attended by 98 per cent of the operators, the general purpose of which is for the improvement of the education, livelihood and health and sanitation of the barrio folks.

The puroks, another organization for barrio improvements, was joined by 96 per cent of the operators. Parents with children attending the elementary grades were members to the P.T.A. The members composed of 82 per cent of the operators.

Owner-operators were members of the B.N.A.S. Project No. 1. This organization had as members all the graduates of the former Bukidnon National Agricultural School who received lots in Managok.

The Roman Catholic sect was participated by 92 per cent and the other religious dominations by 8 per cent of the operators. Usually in religion the children follow the parents.

The owner-operators being graduates, were elected leaders or officers of the different organizations.

Table 23. Participation in organized group by adults in per cent.

ORGANIZATION	OWNER	TENANT	ALL OPERATORS
Barrio Council	100	97	98
Puroks	100	95	96
P.T.A.	100	76	82
B.N.A.S. Project No. 1	100	0	24
Church:			
Roman Catholic	100	89	92
Other religious denominations	0	11	8

The children from 7 years old and above had also another group organizations (Table 24). The organization mostly participated in was the Young Men and Women Organization. The members were single men and women at the ages of from 14 to 26 years. This organization concerns itself with the recreational activities of the barrio.

Some of the young boys and girls who were in school were members of the different school organizations such as the 4-H Club, Boy Scout and Girl Scout organizations with 31 per cent, 16 per cent and 15 per cent respectively. These organizations tend to prepare the young children to be better and useful citizens in the future.

The boys and girls who were able to proceed through the high school and college became members of Student Body Organization as well as their class organizations.

Table 24. Participation in organized group by young members of family.

ORGANIZATION	OWNERS' CHILDREN	TENANTS' CHILDREN	ALL CHILDREN
	Per cent	Per cent	Per cent
Young Men and Women Organization	35	34	35
4-H Club	34	30	31
Boy Scout Organization	26	11	16
Girl Scout Organization	29	6	15
Student Body Organization	21	4	9
Class Organization	21	4	9

SUMMARY AND RECOMMENDATIONS

Farmers have comparatively low income and standard of living. This situation can, however, be remedied. Farmers can increase their income by raising animals and intensifying their production. The best yielding varieties of rice and corn should be planted to increase their production and subsequently their income. They should employ the best cultural and farm management practices. Operators and their families could earn additional income by engaging in hat and mat weaving. Others may earn additional income by doing off-farm work when they are not busy on the farm or during the slack period, like buying and selling, sawing logs, carpentry work, furniture making and tinsmithing and blacksmithing. The income should be raised first before the standard of living could be raised.

The tenant-landlord sharing ratio is dependent on the contribution of each. When the tenant furnishes the implements and work animals and defray the expenses for planting and cultivation, he receives 75% of the harvest. If the landlord furnishes only the implements and work animals, the tenant receives 60%. The sharing is done after the amount for seeds has been deducted.

The "honglos" or communal labor is advantageous to the farmers since they contribute reciprocal labor instead of paying cash which the farmers may not be able to obtain from their produce.

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FARM BUSINESS MANAGEMENT OF COCONUT FARMS IN ZAMBOANGA DEL SUR [1]

Ireneo B. Mendoza and Raymundo E. Fonollera

The coconut farmers in Zamboanga del Sur varied greatly in their characteristics and tenure status. There were more full-owners among the farmers interviewed in the outskirts of Zamboanga City and Manicahan than in Ayala. Farmers in the outskirts of Zamboanga City were older, had more experience in farming and had higher average educational attainment than those in Ayala and Manicahan.

Farmers in the outskirts of Zamboanga City had higher income than those in Ayala and Manicahan. This may be due to the higher production rates among farms in the outskirts of Zambonaga City which was about 5,555 nuts per hectare or 55 nuts per tree per year.

There was a positive relationship between size of farm and income on coconut farms. The income of farmers increased as the size of the farm increased. This relationship is brought about by the economy in labor and lower overhead costs on larger farms.

Incomes of coconut farmers can be increased by the farmers' or members of their families engaging in some supplementary enterprises as poultry raising, piggery or vegetable raising.

The coconut is a versatile crop. It can be industrialized because of its varied products and by-products. Its more important products are copra, oil and dessicated coconut. Its by-products are charcoal from the shells, coir from the husks, brooms from the mid-ribs, fuel from the petioles and many others. These by-products, like the main products can be created into industries and provide more jobs for the unemployed. The industry is second only to rice in total value of production. About eight million Filipinos are directly or indirectly dependent on the industry. The government derives from the industry about five million pesos annually in excise tax.

Only a few economic studies have been conducted on this important industry, most of which were done during pre-war days. There was never a study conducted in Mindanao or the Visayas. The coconut industry in Zamboanga del Sur ranks first in terms of area planted and second in total value of production. [2]

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[1] Experiment Station Contribution No. 4.

[2] Crop and Livestock Statistics, Office of Statistical Coordination and Standards, N.E.C., DANR, 1954-55, pp. 207.

Sacay and Gaac 3/ (1952) studied the economic and social conditions of coconut farmers in Despujols, Romblon, and reported that the average area of farms was 3.4 hectares; the average investment was P3,963.08 and the amount available for family living was P1,818.10 per family or an average of P330.56 for each member.

Tablante and Nuestro 4/ (1952) conducted a study on the marketing of coconuts in the upland towns of Cavite and reported that the nuts were either sold by contract, outright sale of assembled husked nuts or as copra to copra processors.

Robertson and Tablante 5/ (1952) studied investment and income on 132 coconut farms in Indang, Cavite and reported that owner-operated farms average 1.5 hectares in coconuts, and tenant-operated and partly-owned farms were larger and had approximately two hectares in coconuts.

Quintana et al. 6/ (1959) conducted a study on the farm business management of coconut farms in Albay, Camarines Sur, and Quezon and reported that the average number of hectares of coconuts in Albay, Camarines Sur and Quezon were 3.9, 4.3, and 3.8 hectares, respectively. Farmers in Quezon had higher income than those in the Bicol provinces.

The objectives of this study were to find out the present organization, management and problems of coconut farms, to determine the income on coconut farms and the factors affecting them and to make suggestions for the proper guidance of coconut farmers in making profitable changes in their farming.

Selection of the Area

The area selected for study was concentrated in three predominantly coconut localities in Zamboanga del Sur; namely, outskirts of Zamboanga City, Ayala and Manicahan, because of limited funds. These localities were arbitrarily selected upon the suggestions of the city agricultural supervisor, PhilCoA fieldmen and copra merchants.

A total of 120 coconut farms were surveyed with the use of prepared questionnaire; 21 in the outskirts of Zamboanga City, 44 in Ayala and 55 in Manicahan. The farms included in the survey are limited to those having at least one hectare of bearing coconuts.

3/ F.M. Sacay and B.A. Gaac, Philippine Agriculturist, 36, 225-229.
4/ N.B. Tablante and N.M. Nuestro, Philippine Agriculturist, 36, 492-299.
5/ L.S. Robertson and N.B. Tablante, Philippine Agriculturist, 38, 48-56.
6/ E.U. Quintana, B.N. de los Reyes and J.M. Marasigan, Philippine Agriculturist, 42, 374-379.

RESULTS

Tenure Status

Tenants constituted 50 per cent of all farmers surveyed in Ayala, 19 per cent in the outskirts of Zamboanga City and 5 per cent in Manicahan (Table 1). Owner-operators constituted 91 per cent of all the farmers interviewed in Manicahan, 81 per cent in the outskirts of Zamboanga City and 40 per cent in Ayala.

Incidence of tenancy in the three districts studied is relatively low compared to Albay, Camarines Sur, and Quezon provinces. Quintana et al.[7] reported that of the 252 farmers interviewed in Albay, Camarines Sur, and Quezon, in 1955, 62 per cent, 60 per cent, and 41 per cent, respectively were tenants. This result follows almost the same trend as that in Indang, Cavite. Robertson and Tablante,[8] reported a lower incidence of tenancy with only 18 per cent of the farmers interviewed being tenants and 49 per cent were owner-operators. Forty per cent in Quezon and 27 per cent each in Albay and Camarines Sur were owner-operators.

Table 1. Tenure status of coconut farmers

TENURE	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Number of farmers	21	44	55
		Per cent distribution	
Tenants	19	50	5
Part-owners	a/	10	4
Full-owners	81	40	91
	100	100	100

a/ No part-owners at the outskirts of Zamboanga City

Characteristics of coconut farmers

Age. The average farmer at the outskirts of Zamboanga City is 11 years older than the average farmer in Ayala and 10 years older than the average farmer in Manicahan (Table 2).

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[7] *Ibid.*

[8] *Op. cit.*

Table 2. Characteristics of coconut farmers

CHARACTERISTICS	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Age	60.1	48.4	49.7
Years of experience in farming	34.0	21.3	26.3
Years of schooling	9.3	4.8	4.5
Years operating the farm	22.0	13.0	19.0
Years residing in the barrio	44.0	25.0	32.0

Farming Experience. Coconut farmers in the outskirts of Zamboanga City had more experience in farming than those in Manicahan and Ayala. Farmers at the outskirts of Zamboanga City had been farming for 34 years while those in Manicahan and Ayala had been farming for 26.3 and 21.3 years, respectively.

The farming experience of the farmers in the three districts studied is relatively longer than those in Albay, Camarines Sur and Quezon. Quintana et al.[9] reported that farmers in Quezon, Camarines Sur, and Albay have farming experiences of 22 years, 11 years, and 12 years, respectively.

Farmers at the outskirts of Zamboanga City are generally older than those in the other two localities and most of them are owner-operators. Owner-operators stay longer in farming regardless of the size of the farm they operate because they feel more secure.

Educational attainment The educational attainment of the farmers included in this study ranged from 4.5 years in Manicahan to 9.3 years at the outskirts of Zamboanga City. This is comparatively higher than that reported by Quintana et. al. [10] and that reported by Von Oppenfeld et al [11] Quintana reported that the educational attainment of coconut farmers ranged from 3.5 years in Albay to 4.1 years in Camarines Sur while Von Oppenfeld reported that the average educational attainment of farmers in the Bicol region was 4.3 years and 3.9 years in Southern Luzon.

Years operating the farm. The coconut farmers at the outskirts of Zamboanga City operated their farms longer than their counterparts in Ayala and Manicahan.

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[9] Op. cit.

[10] Ibid.

[11] H. and J. Von Oppenfeld et.al. Farm Management, land use and tenancy in the Philippines, Central Experiment Station Bulletin No. [illegible], August, 1957.

Residence in the barrio. The farmers in the outskirts of Zamboanga City and Manicahan resided in the barrios where they are farming longer than those in Ayala. This is true because the farmers in the former two districts operate their farms longer than the latter.

The Farms

Farm size. Size of coconut farms can be expressed in several ways. The common measures used are total farm area, hectares of cropland, hectares in coconut and number of coconut trees.

Total farm area included all cultivated land, farmstead, pasture, forest and wasteland. Farms were generally larger in Ayala than at the outskirts of Zamboanga City and Manicahan. The average size of farms in Ayala was over seven hectares compared to more than 5 hectares at the outskirts of Zamboanga City and Manicahan (Table 3).

Hectares cropland is a better measure of size of farm than farm area. This measure includes only the area devoted to coconut production. Hectares cropland followed the same trend as farm area. However, it must be noted tha a greater proportion of the farm area in Ayala is under cultivation compared to Manicahan and at the outskirts of Zamboanga City.

Hectares in coconut is another measure of farm size. This is a good measure on specialized farms. This excludes the area devoted to crops other than coconut in this study. Ayala still leads Manicahan and at the outskirts of Zamboanga City in terms of hectares in coconut.

Number of coconut trees is also a measure used by coconut farmers. In this measure, only bearing trees are included. The disadvantage of this measure, only bearing trees are included. The disadvantage of this measure when used to compare farms is that the distance of planting in different farms is not the same. There were more trees per farm at the outskirts of Zamboanga City than in Ayala and Manicahan. The farms at the outskirts of Zamboanga City planted more trees per hectare (Table 6), which might have accounted for the higher number of bearing trees per unit area in this locality.

Table 3. Average size of farms

MEASURE OF SIZE	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Farm area (hectares)	5.9	7.8	5.1
Hectares cropland	5.7	6.8	5.0
Hectares in coconut	4.8	5.8	3.8
Number of trees per farm	487	464	356

Farm area by tenure. Size of farm holding by tenure of farm operator differs among the three districts (Table 4).

Table 4. Farm area by tenure

TENURE	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Tenants	5.6	5.8	7.3
Part-owners	a/	9.9	2.7
Full-owners	6.3	7.9	5.5
All tenure	5.9	7.8	5.1

a/ There were no part-owners in the outskirts of Zamboanga City

Land utilization. Ayala and the outskirts of Zamboanga City had a greater proportion of the total cropland devoted to coconut production than in Manicahan. Eighty-five per cent of the total cropland in Ayala and 84 per cent at the outskirts of Zamboanga City were devoted to coconut production. Ayala and Manicahan had almost the same proportion of the total cropland devoted to rice production. Manicahan had 11.5 per cent of total cropland devoted to other crops.

Table 5. Land utilization

LAND USE	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Hectares cropland a/	5.7	6.8	5.0
	per cent of hectares cropland		
Coconut plantation	84	85.3	75.2
Rice land	10	13.0	13.3
Other crops	6	1.7	11.5
Total	100	100	100

a/ See Table 3.

Production

The average production of nuts per hectare was highest at the outskirts of Zamboanga City while Ayala had the highest production of nuts per tree (Table 6). The average yield of nuts per hectare in the outskirts of Zamboanga City is 5,555 nuts, 1.2 times as much as Ayala. In terms of nuts per tree, Ayala had 1.2 times as much as Manicahan and in the outskirts of Zamboanga City.

Relation of number of trees to production rates. It can be seen in Table 7 that as the number of trees per hectare increased the production of nuts per hectare also increased. The production of nuts per tree tends to increase as the number of trees per hectare decreases. The number of nuts per tree did not necessarily increase the yield per hectare.

In this study there were 38 farms with 50 or less trees per hectare, 65 farms with 51 to 100 trees per hectare, and 17 farms with 101 or more trees per hectare.

Table 6. Production rates on coconut farms

DISTRICTS	NUTS PER HECTARE	TREES PER HECTARE	NUTS PER TREE
Zamboanga City outskirts	5,555	101	55
Manicahan	5,030	95	53
Ayala	4,880	80	61
All farms	5,155	92	56

The average yield per hectare of nuts for farms with 50 or less trees per hectare was 3,023, those with 51 to 100 per hectare was 4,753 nuts and those with 101 or more trees per hectare was 7,236.

The average production of nuts per tree of farms with 50 or less trees per hectare was 65 nuts, those with 51 to 100 trees per hectare was 53 nuts, and those with 101 or more trees was 50 nuts.

Table 7. Relation of number of trees to production rates for the three localities.

TREES PER HECTARE		NUMBER OF FARMS	NUTS PER HECTARE	NUTS PER TREE
Range	Mode			
50 and below	50	38	3,023	65
51 - 100	100	65	4,753	53
101 & above	125	17	7,236	50

Land Value

The land values per hectare in the three localities varied considerably. They ranged from P833 in Manicahan to P1,359 in the outskirts of Zamboanga City (Table 8).

One common practice of determining the value of the farm among some farmers is to express it in terms of pesos per tree. Manicahan had the lowest value per tree while the farms in the outskirts of Zamboanga City had the highest with P16 per tree.

Production rates and land values. To study the relationship between production rates and land values on coconut farms, data on the 120 farms in the three localities were analyzed. The farms were grouped according to the number of nuts produced per hectare.

There was a positive relationship between production rates and land values. The land value per hectare increased as the number of nuts produced

DISTRICT	PESOS PER HECTARE	PESOS PER TREE
Zamboanga City Outskirts	1,359	16
Ayala	1,311	14
Manicahan	833	10
All farms	1,167	13

per hectare also increased (Table 9). The average value per hectare of coconut farms with yields of over 8501 nuts per hectare was almost twice as much as those with yields of 1500 nuts and below per hectare.

Table 9. Rate of production and land values per hectare on coconut farms

NUTS PER HECTARE	NUMBER OF FARMS	PESOS PER HECTARE
1500 and below	11	866
1501 - 3,500	31	918
3501 - 5,000	28	1015
5001 - 8500	42	1232
8501 and above	8	1502
All farms	120	1106

Labor Input

Man days per farm. The industry is generally a year round activity for the farmer. Although the work is distributed throughout the year, the period between planting and harvesting leaves the farmer idle if he has no intercrop or supplementary enterprises and does not practice clean culture.

Coconut farmers in Ayala spent more days on the farm because of their large farms. They spent a total of 108 man days compared to 66 and 84 man days in Manicahan and at the outskirts of Zambonaga City, respectively (Table 10).

Cleaning the plantation as part of the maintenance chores took about 52.1 per cent of total farm labor at the outskirts of Zamboanga City and 36.8 per cent of the total farm labor in Ayala. In Manicahan it was about 38.9 per cent of the total farm labor. Very few farmers did any fencing and fertilizing on their farms.

Harvesting, picking of nuts from the tree to hauling nuts to the copra drier took about 27.9 per cent of the total farm labor at the outskirts of Zamboanga City, 41.00 per cent in Ayala, and 46.6 per cent in Manicahan.

Approximately 16.5 per cent of the total labor on the farms was spent for copra making.

Table 10. Average man labor days per farm

FIELD OPERATION	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Total man days	84	108	66
	per cent		
Maintenance			
Cleaning plantation	52.1	56.8	27.8
Fencing	3.5	6.0	8.9
Fertilizing	0	0	0
Harvesting			
Picking	10.3	12.0	14.0
Gathering and piling	6.7	10.0	12.6
Husking	5.9	9.9	11.0
Hauling nuts	5.0	9.0	9.0
Copra Making			
Splitting, drying, meat removing	15.2	15.0	14.7
Hauling copra	1.3	1.3	2.0
Total	100	100	100

Man days per hectare. It took 16 days per hectare to maintain, harvest and prepare copra among farmers in Ayala and Manicahan (Table 11). At the outskirts of Zambonaga City it tool 20 days per hectare.

Table 11. Average man labor days per hectare

FIELD OPERATION	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Maintenance			
Cleaning plantation	9	7	5
Fencing	3	1	2
Harvesting			
Picking	2	2	2
Gathering and picking	1	2	2
Husking	1	2	2
Hauling nuts	1	1	2
Copra making			
Splitting, drying, meat removing, sacking	3	3	3
Hauling copra	a/	a/	a/
Total	20	18	18

a/ less than one.

It required less days to harvest and prepare copra at the outskirts of Zamboanga City though it had greater number of tree because of the efficiency of hired labor.

Labor cost per hectare. Labor cost per hectare was highest in Ayala and lowest in Manicahan, (Table 12). The average labor cost in Ayala was ₱2.43 more than the average cost at the outskirts of Zamboanga City and more by less than one third that of Manicahan.

Table 12. Average labor cost per hectare

FIELD OPERATION	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
		pesos	
Maintenance			
Cleaning plantation	16.70	6.00	10.00
Fencing	0.20	2.30	2.50
Fertilizing	0	0	0
Harvesting			
Picking	24.70	28.00	20.00
Gathering and piling	5.10	7.00	5.70
Husking	11.40	10.00	7.70
Hauling nuts	4.30	6.70	3.15
Copra making			
Splitting, drying, meat removing, and sacking	15.80	21.00	13.88
Hauling copra	0.57	8.80	0.60
Total	78.77	81.20	63.53

Harvesting costs constituted the largest share of the total labor cost in all districts studied. Harvesting is usually done on a contract basis. The harvestors are paid a stipulated rate in pesos per thousand nuts harvested.

Labor input per hectare by size of farm. The size of farm had a marked effect on the labor input per hectare. As the size of the farm increased, the labor input per hectare decreased (Table 13).

Table 13. Relation of size of farm to labor input per hectare

SIZE OF FARM	MAN LABOR DAYS PER HECTARE		
	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
1.0 - 1.9	29.0	17.3	24.3
2.0 - 2.9	25.3	22.3	21.5
3.0 - 4.9	19.4	18.4	18.2
5.0 - 9.9	14.0	16.0	15.0
10.0 - above	13.5	10.0	11.5
All farms	20.2	18.9	18.1

Greater efficiency in the use of labor was achieved on large size farms.

Sharing Arrangement

Tenants usually operate coconut plantations owned by big landowners. Most of the tenants have no written contract with the landlords. The duties of tenants range from keeping the farm free from the trespasses of a third party, maintaining the plantation, intercropping, harvesting, and copra-making. The share maybe based on fixed rates or on how much work he contributed.

Sharing the copra was common in the three districts studied. At the outskirts of Zamboanga City and in Ayala the tenants get from 18 to 17 per cent of the total copra produced and the landlords get not less than 83 per cent. In Manicahan, the tenants get 14 per cent of the total copra produced and the landlords, 86 per cent (Table 14).

This rate of share is lower than those received by tenants in Ayala, Camarines Sur, and Quezon. Quintana et. al. [12] reported that the tenants in Quezon and Albay get 46 per cent of the total copra produced and the landlord, 54 per cent. In Camarines Sur the tenants get one third of the total harvest and the landlord, about two thirds.

Table 14. Sharing arrangement by districts

ITEMS	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Sharing copra			
Copra (kilos)	2,563	16.378	26,392
Landlord	82	83	86
Tenants	18	17	14
By-products (pesos)	(76)	(269)	(34)
Landlord	50	50	50
Tenants	50	50	50

For all farms studied, the coconut by-products and other farm produce are shared equally between tenants and landlords.

THE FARM BUSINESS

Capital investment. Capital investment was highest in Ayala and lowest in Manicahan (Table 15). A greater proportion of the capital investment per farm in the three localities studied was tied up in fixed and semi-fixed assets. Land, including coconut trees, constitutes approximately 81.6 per cent of the farm capital. Dwelling constitutes about 9.7 per cent of the total farm capital and the rest distributed to work animals, other livestock, other buildings, tools and equipment and supplies.

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[12] Quintana et al. Op. cit.

Capital investment on working assets such as tools, equipment, supplies, and other livestock amounted to about ₱458 at the outskirts of Zamboanga City and a little more than ₱260 each in Ayala and in Manicahan.

Farmers did not fully utilize their limited resources. Very few of them raised animals other than those used for work. In all the localities studied productive animals as hogs, goats, poultry, and cattle can be raised profitably ... coconut farms. Hogs and poultry can be fed with by-products of coconut. Goats and cattle can graze under the coconut plantation and keep it clean. These animals also contribute to the maintenance of soil fertility.

Table 15. Capital investment per farm

ITEMS	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Land	7,408.50	8,603.00	3,960.00
Work animals	128.00	155.00	244.00
Other livestock	351.50	178.00	114.00
Dwelling	1,304.00	780.00	326.00
Other buildings	122.00	93.00	51.00
Tools and equipment	99.00	165.00	134.00
Supplies	7.50	17.80	13.00
Total	9,420.00	9,991.80	4,842.00
	Per	cent	
Land	79.2	86.0	81.5
Work animals	1.3	1.6	5.0
Other livestock	4.0	1.8	2.4
Dwelling	14.0	7.8	6.7
Other building	1.3	0.9	1.1
Tools and equipment	0.1	1.7	3.0
Supplies	0.1	0.2	0.3
Total	100.0	100.0	100.0

Farm receipts and expenses. The average farm receipts per farm for the three localities studied ranged from ₱780 in Manicahan to ₱1,334 at the outskirts of Zamboanga City (Table 16). The value of crops sold by the operators was the most important source of receipts.

The average expenses followed the same trend as the receipts in the three localities.

Table 16. Farm receipts and expenses

ITEM	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
	Pesos	Pesos	Pesos
Receipts:			
Livestock & product sold	5	23	13
Value of harvester's share	22	47	34
Crops sold by operator	1,307	922	733
Total	1,334	992	780
Expenses:			
Livestock bought	34	31	7
Value of harvester's share	22	47	34
Building and tools bought	15	10	3
Cash expenses	66	74	60
Hired man labor	324	396	207
Unpaid family labor	137	95	112
Hired animal labor	2	8	5
Decrease in inventory	330	48	110
Total	930	709	508

MEASURE OF RETURNS

The operator's farm labor earnings and family farm labor earnings are the best means of measuring returns from farming. The operator's farm labor earnings refer to the operator's labor and management charging labor contributed by the family and interest on capital as expenses. Family farm labor earnings refer to returns to the farm labor of the operator and members of his family.

Operator's farm labor earnings was highest in Manicahan and lowest in Ayala (Table 17). The average operator's farm labor earnings in Manicahan was P132 while in Ayala it was negative P131. Even with the comparatively higher income of farmers in Manicahan, they may still be considered low when compared to the income of coconut farmers in Quezon.

Quintana et al, [15] reported that coconut farmers in Quezon had operator's farm labor earnings of more than P320 and family farm labor earnings of more than P400.

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[15] Ibid.

Table 17. Measures of profit on coconut farms

ITEMS	ZAMBOANGA CITY OUTSKIRTS	AYALA	MANICAHAN
Net farm income	404	283	277
Interest 6% on average capital	565 a/	600 a/	291
Operator's farm labor income	-- 161	-- 317	- 14
Farm privileges:			
Use of dwelling (10%)	150	78	146
Livestock & products	15	20	14
Rice used at home	45	61	69
Other crops used at home	33	27	30
Operator's farm labor earnings	62	131	132
Value of unpaid family labor	137	95	112
Family farm labor earnings	199	36	244
Operator's non-farm income	682	163	350
Interest on ave. cap. invested	565	600	291
Other family non-farm income	866	15	283
Family income from all sources	2,312	742	1,168

a/ This is 6% per cent of the average capital invested: Zamboanga City, P9,420.50; Ayala, P9,991.80; Manicahan, P4,842.00.

The final judgement is the value of the money available to buy necessities in life. This is represented by the family income from farm and non-farm sources. The average income of farm families on coconut farms at the outskirts of Zamboanga City was P2,312. In Manicahan it was P1,168 while in Ayala only P742 on the average.

VARIATION IN INCOME

Income varied from among farms. This is evident where farms were grouped according to location, size of farm, and production rates.

Location. Farmers in Manicahan and at the outskirts of Zamboanga City earned greater returns than farmers in Ayala (Table 18). However, this has been inconsistent for the different measures of profit used.

The greater profits of farmers at the outskirts of Zamboanga City and Manicahan was mainly due to high production rates and low labor cost per hectare. Production rates in Ayala were considerably low due to the effects of coconut beetle infestation.

In Ayala, however, it took more than mere production rates to increase the income of the farmers. There was greater incidence of tenancy in this district receiving a very low rate of share.

Table 18. Variation in income by districts

DISTRICTS	NUTS PER HECTARE	FARM LABOR EARNINGS		FAMILY INCOME FROM ALL
		Operator	Family	Sources
Zamboanga City outskirts	5,555	62	199	2,312
Manicahan	5,030	132	244	1,168
Ayala	4,480	- 131	- 36	742

Size of farm. Income increased with each increase in size of farm (Table 19). The trend was fairly consistent with regard to family income from all sources. Inconsistency in the other measures was due mainly to the extreme variation in income in Ayala.

Labor cost made up almost one half of the total farm expenses on coconut farms. Since labor is more efficient on large farms, the labor cost per unit area decreases as the size of the farm increases. This results in bigger income earned by farmers in large farms.

Table 19. Farm size and income

SIZE OF FARMS	MAN DAYS PER HECTARE	FARM LABOR EARNINGS		FAMILY INCOME FROM ALL SOURCES
		Operator	Family	
1.0 - 1.9	26.8	4.60	6.30	551.65
2.0 - 2.9	23.0	1.30	77.00	770.00
3.0 - 4.9	18.6	50.30	93.00	1,428.65
5.0 - 9.9	15.0	38.00	132.00	1,944.00
10.0 - above	11.6	110.00	313.30	2,346.30
All farms	18.6	40.85	124.30	1,408.10

Production rates. Farm profits aside from being affected by its size is also affected by yield of nuts per hectare.

Increases in yield were consistently reflected in income (Table 20). High production rates within a farming area is a reflection of fertile soil and good management. Although this may mean high total interest charge on capital investment and higher labor cost, the increase in yield more than offset the added cost.

Table 20. Production rates and income

NUTS PER HECTARE	NUMBER OF FARMS	FARM LABOR EARNINGS		FAMILY INCOME FROM ALL SOURCES
		Operator	Family	
1,500 - below	11	- 53	19.65	515.65
1,501 - 3,500	31	12.65	81.30	1,114.65
3,501 - 5,000	28	4.00	90.00	1,186.65
5,001 - 8,500	42	33.30	138.65	1,513.65
8,501 - above	8	144.65	355.30	2,708,30
All farms	120	23.26	136.98	1,407.38

As the production rates increased the income also increased (Table 20). The trend was the same for operator's and family labor earnings and family income from all sources.

SUMMARY AND RECOMMENDATIONS

While the income of the coconut farmers is low, possibilities of increasing this low income are great.

The results of the study indicate that the coconut farmer works on his farm from 66 to 108 days in a year. He should utilize his time profitably by engaging in some supplementary enterprises like poultry raising, swine raising or vegetable growing. He can also derive additional income by planting cash and catch crops in his plantation. He can manufacture charcoal from the coconut shells and derive additional income. Engaging in off-farm jobs whenever possible may also augment his income.

Livestock raising which he can do under his plantation may well do to increase his income, help keep the plantation clean and maintain the soil fertility.

The share of the tenants from the produce depends on the amount of work they contribute although some tenants receive shares on a fixed rate basis. Tenants were paid for the new coconut trees they plant. Harvesting costs constitute the largest share of the total labor costs. Farmers may do well by harvesting the nuts themselves so that what would otherwise go to harvesters will accrue to them.

/mf

FARM BUSINESS MANAGEMENT OF COCONUT FARMS IN MISAMIS ORIENTAL [1]

Florendo F. Zablan and Isabelo O. Mugot

The coconut farmers in Misamis Oriental varied greatly in their tenure status and slightly in their characteristics and size of farms. The farmers included in this study were predominantly full-owners. Kinogitan had the highest percentage of full-owners. Gingoog and Kinogitan had bigger coconut farms than El Salvador.

Farmers in Kinogitan and Gingoog had higher income than those in El Salvador. This may be due to the higher production rates among farms in Kinogitan and Gingoog which were 3,480 nuts and 4,096 nuts per hectare respectively.

There was a positive relationship between size of farm and income on coconut farms. The income of the farmers increased as the size of the farm increased. This relationship may be the result of efficient utilization of labor and lower overhead costs on larger farms; the labor cost decreases as the size of farm increases resulting to greater income accruing to farmers with larger farms.

Income of farm operators can be increased by raising cash crops and engaging in supplementary enterprises which will also give the operators and their families year-round jobs.

……

Coconut in the form of copra and dessicated coconut is one of our major export crops. The coconut industry is one of the dollar-earning industries of the Philippines. It provides our government with about five million pesos annually in excise tax. The industry earns about 150 million pesos annually in foreign exchange, which is one fourth of the total trade payments.

The coconut industry covers more than thirty provinces with a capital investment of about one billion pesos in land and improvements. About eight million people or more than one third of the total population are directly or indirectly dependent upon the industry for their livelihood. It is second only to rice among our agricultural products in total value of production.

Only a few economic studies have been conducted regarding this industry, most of which were done during pre-war days. Tablante and Nuestro[2] (1953) conducted a study on the marketing of coconuts and copra in the upland towns of Cavite and reported that the price paid by the copra buyers were based on the "Buen Corriente" grade. Only one price was set regardless of the quality of the copra sold.

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[1] Experiment Station Contribution No. 6

[2] N.B. Tablante and M. M. Nuestro, Philippine Agriculturist, 66, 492-499

Quintana et al[3] (1959) conducted a farm business survey of coconut farms in Albay, Camarines Sur and Quezon and reported that there was a positive relationship between size of farm and income of coconut farms.

The objectives of the study were to find out the present organization, management and problems of coconut farms and to determine income on these farms and the factors affecting them. More and up-to-date information along these objectives is important to serve as a basis for making suggestions for making profitable changes and increase the income of the farmers.

Seclection of the Area

The study was conducted in three predominantly coconut towns in Misamis Oriental, selected arbitrarily on the basis of suggestions of municipal agriculturists, PHILCOA men and copra dealers. The study was limited on these towns because of the limited funds for the study.

Data on farm business management were obtained from 120 coconut farms. These data were recorded in prepared questionnaires: 30 each from El Salvador and Kinogitan and 60 from Gingoog. The survey method was primarily used. The farmers included in this study were limited to those having at least one hectare of bearing coconuts.

RESULTS

Tenure Status

Tenants constituted 6 per cent of all the farmers interviewed in Kinogitan, 24 per cent in El Salvador, and 43 per cent in Gingoog (Table 1). Owner operators constituted 90 per cent of all the farmers interviewed in Kinogitan; 73 per cent in El Salvador; and 50 per cent in Gingoog.

Table 1. Tenure status of coconut farmers

Tenure	El Salvador	Kinogitan	Gingoog
Number of farmers	30	30	60
	Percentage distribution		
Tenants	24	6.6	43
Part-owners	3	3.3	7
Full-owners	73	90.1	50
TOTAL	100	100	100

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[3] E.U. Quintana, B.N. de los Reyes and J.M. Marasigan, Philippine Agriculturist, 42, 374-389.

Incidence of tenancy in the three municipalities studied is slightly higher compared to Indang, Cavite. Robertson and Tablante[4] reported that of the 132 farmers interviewed in Indang, Cavite in 1952 only 24 or 18 per cent were tenants.

Characteristics of coconut farmers

Age. The average farmer in El Salvador is older by about four years than the average farmer in Kinogitan and by about 5 years than that of Gingoog.

Table 2. Characteristics of coconut farmers

Characteristics	El Salvador	Kinogitan	Gingoog
Age	52.6	48	47.2
Years experience in farming	27	20	23
Years of schooling	2.4	4.9	3.8

Farming Experience. Coconut farmers in the three municipalities studied did not differ greatly in farming experience. Farmers in El Salvador had been farming for almost 27 years while those in Gingoog and Kinogitan had been farming for nearly 23 and 20 years respectively.

The slight difference in farming experience may be due to the predominance of owner-operators among the farmers surveyed in the three municipalities. Usually when farmers own the land they are cultivating they stick to it regardless of size because their position is more secure than when they are tenants or part-owners.

Educational attainment. The educational attainment of the coconut farmers ranged from 2.4 years in El Salvador to 4.9 in Kinogitan. This is about the same as that reported by Von Oppenfield, et al.[5] in their study in the Bicol region and southern Luzon.

The Farms

Farm size. The most commonly used measures of size of farms are total farm area, hectares of cropland, hectares in coconut and number of coconut trees.

Total farm area includes all cultivated land, pasture, forest, wasteland and the farmstead. Farms were generally larger in Kinogitan and Gingoog than in El Salvador. Kinogitan had on the average over 7 hectares and Gingoog over 5 hectares of total farm area compared to a little more than 3 hectares in El Salvador. (Table 3)

[4] Robertson, L. S. and Tablante, N.B. Investment and Income on 132 Coconut Farms in Indang, Cavite, Philippine Agriculturist, 38, 48-56. 1954.

[5] H. and J. von Oppenfeld et al., Farm Management, land use and tenancy in the Philippines, Central Experiment Station Bulletin No. 1, August, 1957.

Table 3. Average size of farms.

Measure of Size	El Salvador	Kinogitan	Gingoog
Farm are (hectares)	3.2	7.4	5.1
Hectares in cropland	3.2	7.0	4.9
Hectares in coconut	2.4	4.9	4.5
Number of trees per farm	264	898	476

Hectares of cropland refers only to the area devoted to crops including coconut. It is a better measure than the total farm area because the total farm area is not usually devoted to crop production. The trend in terms of hectares cropland remained the same as farm area. However, it must be noted that a greater proportion of the farm area in El Salvador is under cultivation compared to Kinogitan and Gingoog.

Hectares in coconut which is only the area devoted to coconuts is a good measure of size on specialized farms. Kinogitan ranks first among the three municipalities in terms of hectares in coconut. Coconut farmers also use the number of trees per farm in measuring the size of their farms. The disadvantage of this measure of size in comparing farms is that the distances of planting in different farms are not the same. Kinogitan still outranked Gingoog and El Salvador in number of coconut trees per farm.

Table 4. Average size of farm area by tenure

Tenure	El Salvador	Kinogitan	Gingoog
		hectares	
Tenant	3.1	4.5	4.7
Part-owner	2.5	2.0	3.3
Full-owner	2.2	7.1	5.5
All tenure	2.6	4.5	5.5

Farm area by tenure. The three municipalities differed in the size of the farm holdings according to the tenure of the farm operators. In El Salvador the tenants had the largest size of farms.

Land utilization. Kinogitan had a greater proportion of its total cropland devoted to coconut production compared to El Salvador and Gingoog. Almost 93 per cent of the total cropland in Kinogitan was devoted to coconut production. (Table 5)

Table 5. Land utilization

Land Use	El Salvador	Kinogitan	Gingoog
Hectares cropland	3.2	7.4	5.2
	Per cent of hectares cropland		
Coconut plantation	75.25	92.73	89.65
Upland rice	1.62	-	-
Lowland rice	1.04	.58	1.97
Orchard	0.01	4.40	6.56
Corn land	21.11	2.29	1.90
Tobacco land	1.04	-	-
Total	100	100	100

Rice both upland and lowland, and tobacco had a combined area of more than 3 per cent of the total cropland in El Salvador. Twenty-one per cent of the total cropland in El Salvador was planted to corn. Orchard and corn were the crop next in importance to coconut in land use in Kinogitan and Gingoog.

Production.

Gingoog had the highest average production of nuts per hectare and per tree, while El Salvador had the lowest (Table 6). The average yield of nuts per hectare in Gingoog was 4096, higher than El Salvador by a thousand or more nuts. In terms of nuts per tree, average production in Gingoog is nearly 1.2 times as much as in El Salvador.

Table 6. Production rates on coconut farms

Municipalities	Nuts Per Hectare	Trees Per Hectare	Nuts Per Tree
El Salvador	2970	110	27
Kinogitan	3480	120	29
Gingoog	4096	128	32
All farms	3515	119	29

Relation of number of trees to yield. To show the relationship between number of trees to rates of production in the three municipalities, the farms were grouped according to number of trees per hectare. The results show mixed trends regarding the relationship between the number of trees per hectare and production rates. The 130 trees per hectare gave the highest yield of nuts per hectare and 100 trees per hectare gave the highest yield of nuts per tree.

In this study there were 28 farms with one-hundred or less trees per hectare (table 7), 66 farms with 101 to 120 trees per hectare and 26 farms with 121 or more trees per hectare.

Table 7. Relation of number of trees to production rates for the three municipalities

TREES PER HECTARE		NUMBER OF FARMS	NUTS PER HECTARE	NUTS PER TREE
Range	Mode			
100 & below	100	28	2428	31
101-120	120	66	3323	29
121 & above	130	26	4795	28
All farms		120	3515	29

The average yield per hectare of nuts per farm with 100 or less trees per hectare was 2428; those with 101 to 120 trees per hectare was 3323 nuts; and those with 121 or more trees per hectare was 4795.

The average production of nuts per tree of farms with 100 or less trees per hectare was 31 nuts, those with 101 to 120 trees per hectare was 29 and those with 121 or more trees was 28 nuts.

The study seems to indicate that no farms among those surveyed have reached the maximum yield of nuts per unit area. The yield of nuts per hectare had been increasing consistently as the number of trees per hectare increased and showed no point yet where the yield of nuts per hectare decreased as the number of trees per hectare increased. Quintana et al[6] suggested that a farmer starting a plantation must maintain an average of about 200 coconut trees per hectare to get the highest yield.

Table 8. Value per hectare of land and per tree

MUNICIPALITIES	VALUE PER HECTARE	VALUE PER TREE
El Salvador	₱1028	₱ 9.50
Kinogitan	1195	10.70
Gingoog	1200	11.20
All farms	₱1141	₱10.36

Land Values

There was a little variation in the value of land per hectare (table 8). The range was from ₱1028 in El Salvador to ₱1200 in Gingoog. In terms of pesos per tree the trend was the same as the value of land per hectare.

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[6] Quintana et al. op. cit.

Production rates and land values. The 120 farms included in the study were grouped according to the number of nuts per hectare to show the relationship between land values and production rates.

The results show a positive relationship between production rates and land values. (table 9). As the number of trees per hectare increased, land value per hectare also increased. The average value per hectare of coconut farms with yield over 8000 nuts was greater compared to coconut farms which yielded 1500 nuts and below.

Table 9. Rate of production and land values per hectare on coconut farms

NUTS PER HECTARE	NUMBER OF FARMS	PESOS PER HECTARE
1500 & below	22	1025
1501 - 3500	33	1050
3501 - 5000	43	1110
5001 - 8500	20	1212
8501 & above	2	1314
All farms	120	1142

Labor Input

Man labor days per farm. The man labor days per farm ranged from 90 man labor days in Gingoog to 112 man labor days in Kinogitan. The coconut farmers in Kinogitan spent more days in their farms than their counterparts in El Salvador and Gingoog. This is natural since Kinogitan had bigger area and size of farms than either of the other two municipalities. However, coconut farmers in Gingoog spent less in the farm than those in El Salvador although farmers in Gingoog had bigger farms than farmers in El Salvador (table 3).

Maintenance of the plantation took about 66 per cent of the total man labor days in El Salvador; 46 per cent in Kinogitan and 40 per cent in Gingoog. Only one per cent of the farmers surveyed in Gingoog did any fencing. Fertilizing was not done by any of the farmers in El Salvador and Gingoog except in Kinogitan where there were two farmers who fertilized their area.

Harvesting which includes picking, gathering and piling, husking and hauling of nuts utilized about 39 per cent of the man labor days in Gingoog, 32 per cent in Kinogitan, and 21 per cent in El Salvador.

Copra making used the least man labor days among the different farm chores in the three municipalities studied.

Table 10. Average man labor days per farm.

FIELD OPERATION	EL SALVADOR	KINOGITAN	GINGO-OG
Total man labor days	96	112	90
		percent	
Maintenance:			
Clearing plantation	66	46	40
Fencing	-	-	1
Fertilizing	-	a	-
Harvesting:			
Picking	12	17	18
Gathering and piling	8	8	10
Husking	a	1	2
Hauling nuts	-	6	9
Copra making:			
Splitting, drying, and meat removing	12	18	16
Hauling copra	1	4	4
Total	100	100	100

[a] Less than one

Man days per hectare. It took more labor days to maintain, harvest, and prepare copra from a hectare of coconut land in El Salvador than either Kinogitan or Gingo-og. El Salvador had higher man labor days per hectare although it had the smallest area and production rate because it might have used much family labor where there was a possibility of employing more labor than needed.

Table 11. Average man labor days per hectare

FIELD OPERATION	EL SALVADOR	KINOGITAN	GINGO-OG
Maintenance:			
Clearing plantation	12	6	4
Fencing	-	-	a
Fertilizing	-	a	-
Harvesting:			
Picking	6	4	5
Gathering and piling	2	3	2
Husking	a	a	1
Hauling nuts	1	-	a
Copra making:			
Splitting, drying, meat removing	8	6	6
Hauling copra	1	1	1
Total	30	20	18

[a] Less than one

Labor cost per hectare. Labor cost per hectare was highest in El Salvador while Kinogitan and Gingo-og had almost the same costs with ₱53.00 and ₱54.00 respectively. The largest share of the total labor cost in the three municipalities studied goes to harvesting which is generally carried on contract basis. The harvesters are paid with a stipulated rate in pesos per thousand nuts harvested. The highest cost incurred in harvesting is during picking because nuts are generally harvested by climbing the trees.

Table 12. Average labor cost per hectare

FIELD OPERATION	EL SALVADOR	KINOGITAN	GINGO-OG
Maintenance:		pesos	
Clearing plantation	18	9	6
Fencing	2	-	2
Fertilizing	2	3	-
Harvesting:			
Picking	36	24	30
Gathering and piling	3	4	3
Husking	1	1	2
Hauling nuts	1	1	1
Copra making:			
Splitting, drying, meat removing	12	9	9
Hauling copra	2	2	1
Total	75	53	54

Relation of size of farms to labor input per hectare. Labor input per hectare decreased as the size of the farm increased (Table 13). Usually bigger size farms have higher labor efficiency than small-sized farms.

Table 13. Relation of size of farms to labor input per hectare.

SIZE OF FARM	EL SALVADOR	KINOGITAN	GINGO-OG
1.0 - 1.9	55	37	31
2.0 - 2.9	29	24	25
3.0 - 4.9	28	18	18
5.0 - 9.9	26	16	16
10 & above	6	9	8
All farms	29	20	19

Sharing arrangement. The sharing arrangement between landlord and tenant of the produce in the farm depends on the kind of product.

The sharing of the copra produced is done by giving the landlord two-thirds of the total production and the tenant gets one-third.

When nuts are sold the same sharing arrangement as the copra is followed, Nuts used by the tenants for food are not counted in the sharing.

Charcoal manufactured from the coconut shells, by-product of copra making is all given to the tenant. Coconut toddy or "tuba" is shared equally between the landlord and tenant.

Table 14. Sharing arrangement by municipalities

ITEM	EL SALVADOR	KINOGITAN	GINGO-OG
		per cent	
Sharing copra:			
Copra (kilos)	(1891)	(5193)	(4792)
Landlord	90	92	83
Tenant	10	8	17
By-products (pesos)	(18)	(25)	(36)
Landlord	3	2	1
Tenant	97	98	99
Sharing nuts:			
Nuts	(31)	(63)	(93)
Landlord	13	4	42
Tenant	87	96	58

The Farm Business

Capital investment. Kinogitan has the highest capital investment per farm while El Salvador has the lowest (Table 15). A greater proportion of the capital investment per farm in the three municipalities studied was tied up in land (including coconut trees), dwelling, and other livestock in that order.

Capital investment on working assets such as tools and equipment, supplies and other livestock amounted to ₱428.00 in Gingo-og, Kinogitan and El Salvador had ₱536.00 and ₱649.00 respectively.

A few farmers utilized the area under the coconut trees by allowing animals to graze under them. This was especially true in Kinogitan and El Salvador where a number of cattle, goats, and carabaos were allowed to graze under the coconut trees. These animals did not only give income to the farmers but also helped in keeping the plantation clean and in maintaining the soil fertility.

Table 15. Capital investment per farm

ITEM	EL SALVADOR	KINOGITAN	GINGO-OG
		pesos	
Land	2474	7993	4724
Work animals	140	121	68
Other livestock	472	374	174
Dwelling	1225	2778	1066
Other buildings	32	37	67
Tools and equipment	37	28	20
Supplies	-	13	1.5
Total	4380	11344	6120.50
		per cent	
Land	56	70.5	77
Work animals	3	1.0	1
Other livestock	11	3.4	3
Dwelling	28	24.5	17.5
Other buildings	0.8	0.3	1.0
Tools and equipment	0.9	0.2	0.3
Supplies	-	0.1	0.02
Total	100	100	100

Farm receipts and expenses. The average farm receipts ranged from P670.70 in El Salvador to P2006.75 in Kinogitan (Table 16). The value of crops sold by the operator is the most important source of receipts.

Farm expenses ranged from P245.15 in El Salvador to P560.85 in Kinogitan. Hired man labor constituted the highest item of expense in Kinogitan and Gingo-og while the value of unpaid family labor was the highest item of expense in El Salvador.

Table 16. Farm receipts and expenses

ITEM	EL SALVADOR	KINOGITAN	GINGO-OG
		pesos	
Receipts:			
Livestock and product sold	164.00	49.95	95.00
Value of harvesters share of crops	1.70	4.00	2.60
Crops sold by operator	541.00	1952.80	1182.00
Total	670.70	2006.75	1279.60
Expenses:			
Livestock and product bought	4.75	51.65	1.08
Value of harvesters share of crops	1.70	4.00	2.60
Buildings and tools bought	a	a	2.00
Cash expenses	30.20	56.85	48.00
Hired man labor	65.30	218.50	226.00
Value of unpaid family labor	80.30	74.35	42.25
Hired animal labor	7.40	-	3.00
Decrease in inventory	55.50	155.50	138.15
Total	245.15	510.85	320.80

a/ Less than one

Measures of Returns

The operators' farm labor earnings and family farm labor earnings are the measures for determining returns from farming. The operators' farm labor earning is what the operator gets for his labor and management. The family farm labor earnings represent the returns to the operator and family farm labor and management (Table 17). Both measures of returns were consistently high in Gingo-og and Kinogitan while El Salvador had the lowest. The average income of farmers in Kinogitan is about three times as much as the income of farmers in El Salvador.

The amount available for family living is the best measure for comparable earnings of farm families with earnings of farm families in other occupations. The average income of farm families on coconut farms in El Salvador was P833.50; Gingo-og had P1276.65; and Kinogitan had the highest income of P2490.25. These incomes of coconut farmers are higher compared to the income of coconut farmers in the Bicol region and Quezon province.[7]

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[7] Ibid.

Table 17. Measures of profits on coconut farms

ITEM	EL SALVADOR	KINOGITAN	GINGO-OG
Net farm income	425.55	1448.90	958.80
Interest on average capital	262.80	680.65	370.20
Operators' labor income	162.75	768.25	588.60
Farm privileges:			
Use of dwelling	122.50	277.80	106.60
Livestock and product	87.00	80.00	38.00
Rice used at home	73.00	29.00	30.75
Other crops used at home	21.90	48.00	61.75
Total	304.40	435.70	237.10
Operators' farm labor earnings	467.15	1203.95	825.70
Family farm labor earnings	547.45	1278.30	867.95
Operators' non-farm income	23.25	462.00	37.50
Value of unpaid family labor	80.30	74.35	42.25
Interest on average capital	262.80	680.65	370.20
Other family non-farm income	-	69.95	1.00
Family income from all sources	833.50	2490.25	1276.65

Variation in Income

The income of the different farms varied when they were grouped according to location, size of farm and production rates.

Location. Farmers in Kinogitan earned greater returns than farmers in Gingo-og and El Salvador. This has been consistent for the different measures of profits used (Table 18).

The greater profits of farmers in Kinogitan were due mainly to the size of the farms. It was also partly due to the status of farm operators; 90 per cent were full-owners (Table 1).

Although the farmers in Gingo-og had the highest production of nuts per hectare, farmers had a lower income because their main source of income was copra. Income obtained from the sale of livestock and poultry products and also from off-farm jobs were very little.

Low income of farmers in El Salvador can be attributed to the low production rates of their coconut farms. Farmers in El Salvador had the smallest average area cultivated and maintained (Table 5).

Table 18. Variation in income by municipalities

MUNICIPALITIES	NUTS PER HECTARE	FARM LABOR EARNINGS		FAMILY INCOME FROM ALL
		Operator	Family	Sources
Kinogitan	3480	1203.95	1278.30	2490.25
Gingo-og	4096	843.10	902.10	1486.95
El Salvador	2970	467.15	547.45	833.50

Size of farm. Income increased with each increase in size of farm (Table 19). The trend was fairly consistent in all measures of income used.

Labor cost constitutes about half of the total farm expenses on coconut farms. Because labor is more efficiently utilized on large farms, the labor cost decreases as the size of farm increases. This results in greater income accruing to farmers on larger farms. This corroborates the findings of Quintana et al.[8]

Table 19. Farm size and income

SIZE OF FARM	MAN DAYS PER HECTARE	FARM LABOR EARNINGS		FAMILY INCOME FROM ALL SOURCES
		Operator	Family	
1.0 - 1.9	41	494.00	572.40	1380.40
2.0 - 2.9	20	715.20	795.30	1420.00
3.0 - 4.9	21	820.40	877.40	1475.10
5.0 - 9.9	19	905.30	958.20	1500.00
10 & above	8	1210.90	1252.10	1600.00

Production rates. The yield of nuts per hectare greatly affects the profits just as size does. The study shows that as the yield of nuts per hectare increased, the income of the farmers also increased. The increased yields more than offset the added costs due to the total interest charged on the capital invested and labor costs.

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[8] Ibid.

Table 20. Production rates and income

NUTS PER HECTARE	NUMBER OF FARMS	FARM LABOR EARNINGS		FAMILY INCOME FROM ALL SOURCES
		Operator	Family	
1500 & below	22	590.20	677.50	1355.20
1501 - 3500	33	630.50	682.20	1464.40
3501 - 5000	43	855.50	902.20	1477.40
5001 - 8500	20	872.10	955.00	1489.00
8501 & above	2	1202.00	1238.00	1570.00
Total	120	830.05	890.90	1475.15

Tenancy practices. The duty of the tenant ranges from starting and maintaining the plantation, intercropping, harvesting and copra making. Usually tenants and landlord do not have written contracts. As long as the tenant remains loyal to his landlord he will forever stay on the land. However, tenants are not traditionally tied to the land.

As reported by the farmers, neither they nor their landlords liked written contracts. The term of holding is indefinite. In the municipalities of Gingo-og and Kinogitan tenant farmers are paid for the improvements they made on the land. Sharing was generally done on the two-third for the landlord and one-third for the tenant basis. Other crops raised under the coconut trees except the fruit trees are not shared but goes to the tenant.

Production Practices

Intercropping. Fifty-three per cent of the farmers practiced intercropping in El Salvador; 48 per cent in Gingo-og, and 43 per cent in Kinogitan. In areas where the coconut trees were spaced farther apart corn, rice and root crops were planted.

Weeding. It was observed that there was no intensive effort done towards the control of weeks. The most prevalent weeks were cogon (*Imperata cylindrica*, Linn.) amor seco (*Andropogon aciculatus* Retz.), and guinea grass (*Panicum maximum* Jacq.). Bolo and sickle were primarily used in cutting the tall grasses that obstruct the harvester and hide thenuts during harvesting. Farmers cultivated the spaces between their coconut plantations not for controlling weeds but for the purpose of growing other crops. Others left their coconut plantation to nature's care. Pasturing animals under the plantation also helped in keeping it clean.

Pest Control. There had been a considerable work done on the control of pest by the government in the area studied. The coconut leaf miner is one of the serious pests discovered. However, its infestation was immediately checked thru the cooperation of the coconut farmers and the PhilCCA men.

Coconut owners were charged ₱0.10 per tree for the control of the said pest. Other pests were of coconut and the asiatic palm weevil, the last two however have not caused serious damage to the plantations.

Table 21. Production practices

	EL SALVADOR	KINOGITAN	GINGO-OG
Number of farms	30	30	60
Intercropping (%)	53	43	48
Weeding:			
Bolo or sickle	52	68	83
Plow or carabao	46	10	8
Pest control	-	2	-
Pasture	2	2	9

Disease control. The existence of such destructive diseases as the "cadang-cadang" and coconut bud rot was not known to be prevalent in the areas studied. Information from the farmers have not provided concrete grounds for believing the outbreak of such diseases since no heavy infestations have occurred.

Method of harvesting. The coconut trunks in most of the farms are provided with notches with horizontal bottoms enough to accommodate the foot and are placed alternately on two opposite sides. The nuts therefore are generally harvested by climbing the trees. Climbers provided themselves with scythes or bolos with curved ends intended for cutting the base of the matured inflorescence. Harvesting by this method was reported to be about 99 per cent of the farmers included in the study.

Poles and "linkao" are only used when the trees are yet a few meters high because climbing cannot be compensated by the amount of nuts that can be gathered. Only about 1 per cent of all farms have used poles and "linkao".

Stage of nuts harvested. The stages at which nuts are picked and harvested from the trees vary according to the discretion of the coconut owners and the harvesters. Generally, nuts are picked every 3 or 4 months and at this time about 2 or 3 fully-matured inflorescence and 3 to 4 three-fourths matured inflorescence can be harvested from each full bearing tree.

The farmers in the three municipalities studied reported that nuts are harvested when they are three-fourths matured and fully matured (Table 22).

Only a few farmers harvested the nuts when they are only half matured. Harvesting half-matured nuts may be resorted to by farmers when they in dire need of money.

Table 22. Harvesting practices in the three municipalities

ITEMS	EL SALVADOR	KINOGITAN	GINGO-OG
	per	cent	
Method of harvesting:			
Climb tree	98	99	99
With "linkao"	1	-	-
Poles	1	1	1
Stage of nuts harvested:			
Fully-matured	16	14	7
Three-fourth and fully matured	77	83	91
One-half matured	7	3	2

SUMMARY AND RECOMMENDATIONS

The farmers included in this study had a relatively low income. Opportunities for increasing this low income are however, not limited.

Farmers can plant additional cash crops like vegetables, fruits and root crops. Supplementary enterprises like swine and poultry raising can be added to the coconut enterprise without these enterprises competing with coconut for the farm resources. Cattle or carabao or goats can utilize the spaces under the plantation for pasture and bring additional income to the farmers; they also help keep down the weeds and maintain the soil fertility.

Additional income can also be derived from the coconut by-products. The husks can be manufactured for doormats, the shells manufactured into charcoal and brooms made out of the coconut midribs.

Employing in off-farm jobs can augment the income of the farmers. Family labor can be utilized more on the farm to minimize the cost of hired labor. The amount that will otherwise go to hired labor will accrue to the farmers.